



# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference Cal 88558	<b>FOR FURTHER ACTION</b>  See Form PCT/PEAA16	
International application No. PCT/EP2004/012098	International filing date (day/month/year) 26.10.2004	Priority date (day/month/year) 27.11.2003
International Patent Classification (IPC) or national classification and IPC B01J23/36, B01J37/02, B01J31/02, C07C6/04		
Applicant POLIMERI EUROPA S.P.A		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of 7 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  24.02.2005	Date of completion of this report  02.03.2006	
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Zuurdeeg, B  Telephone No. +31 70 340-4467  	

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1, 2, 4-8, 10-13	as originally filed
3, 3A, 9	received on 24.02.2005 with letter of 23.02.2005

**Claims, Numbers**

1-24	received on 24.02.2005 with letter of 23.02.2005
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- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☒ the description, pages 9
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked: "superseded."

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**Box No. IV Lack of unity of invention**

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1. ☐ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
  - ☐ the parts relating to claims Nos. .

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-9,14-16,21-23
	No: Claims	10-13, 17-20, 24
Inventive step (IS)	Yes: Claims	
	No: Claims	1-24
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item I**

**Basis of the report**

The amendments filed with the letter dated 23.02.2005 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.

The amendments concerned is the modification of the amount of 1-hexene from 13 ml to 26 ml in example 2, on page 9. The applicant argued that this can be considered as an obvious mistake because comparative examples 4, 6, and 8 would not be comparative.

The International Preliminary Examining Authority cannot share this view: it is not immediately evident (i) that an error has occurred and (ii) what the correction should be, at least not directly and unambiguously (see PCT Guidelines 8.01).

The amendment on page 9 therefore contravenes the requirements of Article 34(2)(b) PCT.

**Re Item IV**

**Lack of unity of invention**

This Authority considers that there are 2 inventions covered by the claims indicated as follows:

- I: Claims 1-9 directed to a process for the preparation of a heterogeneous catalyst
- II: Claims 10-24 directed to a process for the conversion of olefins

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The application contains the following independent claims:

- activity/process claims (independent claim 1)
- activity/process claims (independent claim 10)

In the present case of claims belonging to the same category, only the catalyst may constitute a link. Therefore, the requirement of unity of invention is only satisfied under the precondition of the catalyst being novel and inventive. However, the catalyst in common, is already known from US-A-2003/0023125 or D1 (see examples 1 and 2; see also Item V, 2.2), since the application does not contain evidence that the catalyst obtainable by the method according to claim 1 is different from those prepared by the method as in D1.

With the catalyst in common being not novel, independent claims 1 and claim 10 are not so linked as to form a common general inventive concept.

Hence, the application contains multiple (groups) of inventions, as identified above, which are not unitary in the meaning of Rule 13.1 PCT.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:  
D1: US-A-2003/0023125  
D2: US-A-4,207,424
2. The present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of claims 1-24 either is not new in the sense of Article 33(2) PCT or does not involve an inventive step in the sense of Article 33(3) PCT in view of documents D1 and D2.
  - 2.1 Document D1 (see examples 1-3; claims 1-5, 7, 9; paragraphs [0023] to [0043]) is considered to represent the most relevant state of the art.

The subject-matter of independent claim 1 differs from this known process in that a different silicon containing compound is used to treat the alumina carrier, namely a silane compound instead of compounds containing Si-O bonds.

To the applicant is pointed out that currently there is no evidence on file to support any unexpected effects or properties to result from the above identified difference, since there are no comparative examples on file; in comparative example 8, a double amount of 1-hexene is used as is used in example 2 according to the invention (26 ml versus 13 ml; see Item I). Furthermore, the amount of silicium added differs in example 1 and comparative example 7 (0.087 g of  $\text{SiMe}_3\text{Cl}$  versus 0.260 g of  $\text{Me}_3\text{SiOSiMe}_3$ ) and the amount of cocatalyst solution differs in examples 2 and 8 (23 ml versus 12 ml). The rhenium content is however the same in example 1 and comparative example 7.

Alleged but unsupported advantages cannot be taken into consideration in respect of the determination of the problem underlying the application. The nature of the comparison with the closest prior art must be such that the effect is convincingly shown to have its origin in the distinguishing feature of the invention.

The problem to be solved by the present invention may therefore be regarded as to provide a further method of preparing a metathesis catalyst.

D2 (see examples 1-6, 9 and 11, and examples 7, 8 and 10) discloses that the silanizing agent having the general formula  $\text{R}_n\text{SiCl}_m$  is an **equivalent** to the compounds having Si-O bonds which are used in D1, for treating alumina with an organic silylating agent.

The arguments of the applicant concerning the issue of equivalence are not convincing; the skilled person is confronted with the partial technical problem of to provide an alternative process for preparing an inert alumina carrier comprising silica.

Consequently, the skilled person, when trying to solve the above identified problem, would have replaced the compound having Si-O bonds with the silanizing agent having the general formula  $\text{R}_n\text{SiCl}_m$  in the expectation to arrive at a useful process for the preparation of a metathesis catalyst containing rhenium as active compound.

The subject-matter of independent claim 1 does therefore not involve an inventive step as required by Article 33(3) PCT.

- 2.2 There is no evidence on file that shows that the catalyst obtainable by the method of claim 1 is novel over the catalysts prepared by the method of D1 (see Item V above, 2.1, third paragraph).

The subject-matter of claim 10, wherein the catalyst is defined as a product in terms of a process, has to be construed as a claim directed to the process for the metathesis of olefins carried out in the presence of the catalyst as such; a product is not rendered novel merely by the fact that it is produced by means of another process (PCT Guidelines, A5.26[1]); both the catalyst prepared according to the process of the present invention as well as the metathese catalyst of D1 comprise a silicon treated alumina with rhenium as active component.

Therefore, the subject-matter of independent claim 10 lacks novelty in view of document D1. It does not fulfill the requirements of Article 33(2) PCT.

- 2.3 Dependent claims 2-9 and 11-24 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, either are new or involve an inventive step with respect to the prior art named in the present proceedings. The reasons therefor are that:
- 2.4 The additional features of claims 11-13, 17-20 and 24 are known from D1 (see [0008], [0021] and [0043]; examples) and said claims donot fulfill the requirements of Article 33(2) PCT.
- 2.5 Although the subject-matter of dependent claims 2-9, 14-16 and 21-23 is novel in view of D1, the additional features of the claims 3-8 are directly known from D1, the features of claims 2, 9, 14-16 and 21-23 are combinations of features obvious to the man skilled in the art in consideration of the disclosure of the prior art named in the present proceedings, or they concern only minor modifications which lie within the normal practice of the man skilled in the art; it is at present not possible to identify in the application documents evidence that the features of dependent claims 2, 9, 14-16 and 21-23 either provide an unexpected technical effect or solve a different technical problem.



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The subject-matter of the dependent claims 2-9, 14-16 and 21-23 does not involve an inventive step over the disclosure of D1 (Article 33(3) PCT).